TMF

July 1991

THE MAC FLYER - For Greater Safety in MAC Air Operations

Delivering VIPs . . . page 19

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THE MAC FLYER—For Greater Safety in MAC Air Operations

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WINNERS

1991 MAC FLIGHT SAFETY WRITING CONTEST

First Place

"Attack Of The Killer Tomatoes"
By Capt. Philip A. Bossert, Jr.
438 MAW
McGuire AFB, New Jersey

Second Place

"Safety Meeting?"
By Capt. Robert T. McSpadden
53 MAS
Norton AFB, California

Third Place

"I Wish I Were A Safety Conscious Pilot"
By Capt. Michael A. Vinskey
337 MAS (AFRES)
Westover AFB, Massachusetts

HONORABLE MENTION WINNERS

"We Just Disagree"
By Maj. Donald R. Dillman
183 MAS (ANG)
Jackson, Mississippi

"A Drop In The Bucket"
By Lt. Col. James P. Bronowski
453 AREFW (AFRES)
March AFB, California

"The Dream"
By TSgt. James W. McClain, Jr.
8 SOS
Hurlburt Fld, Florida

"Which Way Home?"
By Col. Richard F. Picanso
HQ ESD
Hanscom AFB, Massachusetts

"Leadership And Flight Safety"
By Capt. Philip A. Bossert, Jr.
438 MAW
McGuire AFB, New Jersey

"Dawg Fight In The Desert"
By Maj. John P. Sheehan
435 TAW
Rhein-Main AB, Germany

"What Is My Present Position"
By Maj. Terry L. Mast
HQ MAC/AOS
Scott AFB, Illinois

"Accountability"
By Lt. Col. J. Norman Komich
9001 ARS (ARPC)
Denver, Colorado

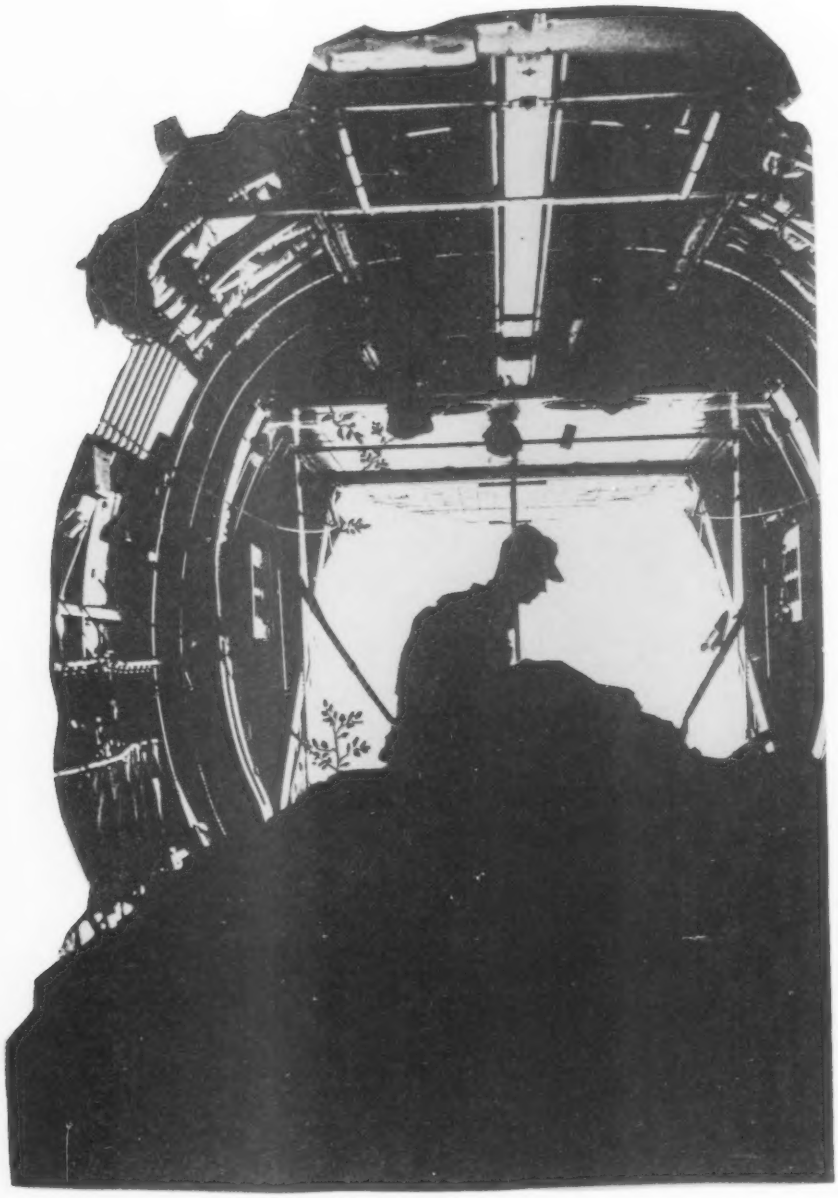
"Nice Day For A War"
By Capt. Angel D. Gonzalez
17 MAS
Charleston AFB, South Carolina

SPECIAL CATEGORY

"Pop"
By Mr. Donald R. Dillman
Colleyville, Texas

"In Olden Times"
By Maj. Grover C. Tate, Jr., USAF (Ret)
Joshua, Texas

Attack of the Killer Tomatoes



By Capt. Philip A. Bossert, Jr.
Air Force Academy CO

Chronic Fatigue—A long-term state of increased discomfort and decreased efficiency resulting from prolonged or excessive exertion; loss of power or capacity to respond to stimulation persisting over a long period of time.
—Dorland's Illustration Medical Dictionary, 25th Edition

"My feet were like lead weights . . . my entire body ached . . . I felt completely drained . . . and sometimes I thought I was in a bad dream. In other words, I felt like crap all over."
—A MAC aircrew member during Operation DESERT SHIELD/STORM

* * *

King Khalid military airport was a fury of activity. Although it was late at night, F-16s were departing at a frantic pace, eager to make their next kill. Out of the darkness, Capt. Bob Hathaway hurried back to his C-141B. As he looked around at this surreal

1991 MAC FLIGHT SAFETY WRITING CONTEST FIRST PLACE

site, he thought, This is unbelievable. I'm in a war zone!

It had been a long and stressful day. Flying into a hostile area in a large, green, defenseless aircraft with wing cracks was no fun, but at least the U.S. and allies had quickly gained air superiority. The biggest fears Hathaway and his fellow MAC pilots had were of chemical attacks while on the ground and midairs by friendly aircraft because the skies were so crowded.

He thought he had serious worries before DESERT STORM began—assignments, additional duties, to stay in or get out. Hathaway now realized how war brought everything into perspective quickly and rudely. Those problems seemed so distantly insignificant now as the killing raged just a few miles north. As he climbed aboard his jet and made his way to the flight deck, fatigue began to show. He had been up almost 22 hours. Torrejon ACC hadn't alerted his crew until eight hours into their window, and he couldn't get back to sleep—probably because of the news clips showing fighting at the front.

Hathaway slid into the left seat, and as the weight shifted from his feet to his backside, fatigue engulfed him. It was going to be a long flight back to Spain.

On the flight into the AOR, he had allowed his copilot, 1st Lt. Gerry Meyer, and their pool pilot, 1st Lt. Jim Walker, time to sleep. He planned to hit the bunk on the way and hoped he could stay alert until then. Luckily, Meyer had the return leg, and both Meyer and Walker appeared to be well rested.

He quickly organized his "nest," carefully completed the avionics preflight, and strapped in. Just as the engineer, scanner, and copilot all checked in on the interphone ready to start checklists, four F-16s thundered northward in five-second intervals, heavy with Mavericks, AIM-9s, cluster bombs, and other weapons. Their C-141 shook as each fighter rocketed skyward.

A smile crossed Hathaway's haggard, unshaven face as he thought, now this is a way to fight a war. Give'em all you got; pound them into hell; and don't let up until they surrender.

They quickly started engines, finished their checks, got their clearance, and departed into the blackness above.

Hathaway and his crew couldn't wait to level off so they could remove their chem warfare gear. The charcoal suits were uncomfortable and made the agony of their 24-hour crew duty day that much more painful.

Meyers smoothly leveled off at FL350 and called for the cruise check. It was completed quickly, along with their first estimate of fuel overhead destination and block time. Radio frequencies for their mandatory calls and IFF codes were doublechecked. With everything under control, Hathaway asked, "Unless anyone needs something, I'm going to hit the bunk for a few hours."

No one objected. Meyers just added, "Have a nice one, boss. You look like you need it." Hathaway couldn't argue with that.

"Copilot's plane and radios."

"Copilot's plane."

"If you need anything, don't hesitate to wake me."

With that, Hathaway slowly pulled his fatigue-ravaged body to the crew bunk in the hayloft area. Walker eagerly hopped into the left seat. Bob Hathaway was fading fast.

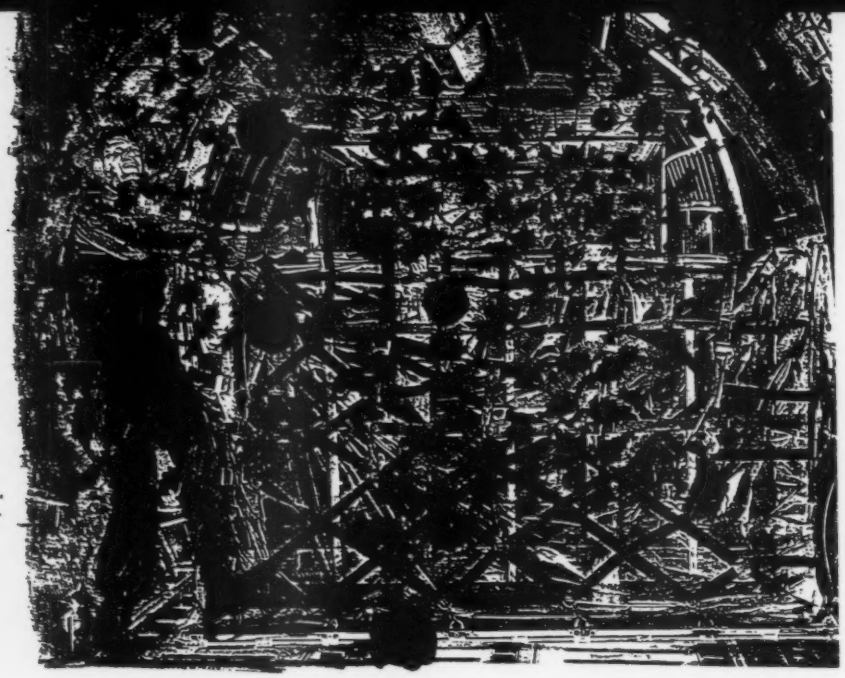
Just a few weeks before, while back home burning some flying time, he heard their squadron flight surgeon discuss chronic fatigue at a safety meeting.

As Hathaway crawled into the bunk, sank his head onto his flight jacket, and covered himself with a grey blanket, he smiled as he remembered what Doc Savage had said, "The best way to combat chronic fatigue is to drink plenty of water, eat the right foods, exercise, and sleep as much as you can." That was the last thought the chronically-tired AC had before he began a nightmare he would never forget.

* * *

They were halfway to Lajes AB, Azores. The weather was beautiful, not only at their destination but at their departure point—Cape Kennedy—just three hours behind. On board was the payload of the Orbus-24 research satellite the shuttle Discovery had just returned from a seven-year stay in orbit. Vegetable seeds were part of the payload, and a U.S. Army research team in the Azores planned to study them. Bob Hathaway was methodically reviewing Gerry Meyers' training folder. They were discussing emergency procedures.

"Now Gerry, no matter



what happens to your jet, what do you always do first?"

"Fly the plane," he quickly answered.

"Right, and then you analyze the situation and take the appropriate action. There may be some situations requiring modifications of procedures, like unusual flight control malfunctions. Whatever happens, follow those three steps, DASH One guidance, and use old-fashioned common sense."

"Bob, thanks for the training. Some ACs aren't as generous with their time."

"No sweat. I enjoy instructing, especially when I'm not dead tired. It also helps the time over the pond go faster."

Just as things seemed to be going as well as any C-141 crew could hope for, the loadmaster nervously announced over the interphone.

"Hey, Captain, we got a problem back here!"

The lighthearted cockpit atmosphere was suddenly shattered. Hathaway shot back, "Loadmaster, pilot. What's up?"

"Sir, on pallet position 13, something's wrong. It's moving or shifting. I think it might have gotten loose."

"Well, do you need any help securing it?" asked a concerned Hathaway.

"No, I think I'll be okay, but something just doesn't seem right."

Hathaway and Meyers looked at each other with concern. A few tense moments went by as the loadmaster made his way back around twelve pallets to the suspected problem.

"AAAAAAHHHHHHHH! Help! Help!" screamed the terrified loadmaster.

Panic gripped the entire crew.

"Copilot's plane!" ordered Hathaway. "Scanner, follow me."

They flew to the cargo compartment but froze in their tracks as the nightmarish scene before them unfolded.

Huge, vinelike tentacles undulated around the rear of the aircraft, covering the last pallet. The doomed loadmaster was pinned against the right troop door, screaming for his life . . . which would soon end.

"AAAAAHHHHHHHH!" continued the flailing loadmaster.

A few seconds, which seemed like hours, went by as Hathaway and Sergeant James, the scanner, tried to fathom this horribly incredible situation.

"Sir, the vegetable seeds from that satellite must have been exposed to cabin air," said James.

But before the dazed, shocked, and mortified aircraft commander, who thought he had seen everything in his eight years of flying, could respond, the loadmaster began yelling again.

"Help, help, please help! It's squeezing me to death."

"How do we help him?" asked James, frantically.

"The fire axe!" yelled Hathaway.

Quickly reaching back to the inboard ACM seat, he ripped the axe from its brackets and scurried back around the pallets.

Hathaway's mind was chaotic, still trying to make sense out of this unbelievable situation.

Options, options, he thought. What to do next? Finally, he was only a few feet from TSgt. Purdy, the loadmaster, who was now deathly quiet and limp.

With terror, Hathaway be-

gan swinging the axe at the thorny tomato vines flailing around Purdy. As he smashed one tentacle, an eerie screech arose from the killer plant. The vines were growing out of a large hole in a box labeled "NASA—DANGER—KEEP SEALED." Radiation symbols dotted the large, black canister. The wounded vine fluttered momentarily, then fell backward with a thud onto the ramp. Another came for Hathaway . . . and another . . . then another. He had to pull back quickly or suffer the same fate as Purdy, whose lifeless body was being dragged back to the black canister by dozens of small vines.

The killer tomato was thrashing toward Hathaway so quickly he tripped several times trying to escape. About midway through the cargo compartment near pallet position six, he had a chance to catch his breath.

"What the hell now?" he frantically thought while just barely avoiding hyperventilating from sheer terror and physical exhaustion. He looked around and saw Sergeant James approaching to help. Then Hathaway noticed over James' shoulder, just above his Blue Diamond patch, a fire extinguisher.

"James, get that extinguisher and hit that thing with a few bursts."

The terrified scanner instinctively followed Hathaway's order. With a deep breath, James aimed the extinguisher nozzle at the quickly advancing vines and, just as Hathaway slipped past him, sprayed the mutated plants furiously. Hathaway took another extinguisher and joined James. The cargo compartment quickly filled with white mist. They pulled back closer to the flight deck, coughing from the Halon. Nothing moved for several minutes. The two aircrew members huddled by the cockpit entrance door, scanning the eerie scene.

"Looks like we killed it, sir," shouted a relieved James. "Maybe if we had fed it a box lunch it would have died sooner."

But suddenly, out of the seething Halon, twice as many vines scurried forward, gyrating wildly.

"Get upstairs, quick!" ordered Hathaway, who then followed James into their last refuge. They locked and secured the door behind them, pushing NAV Kits, helmets, bookbags, and anything else not bolted down, against the thin flight deck door. The situation was desperate, and Hathaway was running out of options. As he strapped into his seat, he filled the unbelieving copilot and engineer in on the situation. They were two hours from Lajes with nowhere to land.

"Send out a Mayday, now!" he ordered the frightened copilot, who just then realized he might never see his fiancee again.

"Engineer, scanner, any ideas?"

Silence indicated they were out of options too. Hathaway was sweating like a pig. He looked around for a tissue to wipe his face and noticed Meyers' training folder. Like a jolt from heaven, Hathaway remembered the training he had covered with Meyers earlier.

"Fly the plane, analyze the situation, take appropriate action."

"But what action, damn it?" the terrified Hathaway shouted to himself.

"BAM, BAM, WHACK, WHACK," thundered just 10 feet behind him as an oily, thorny, vicious, twisting, tomato tentacle broke through the cockpit door. In shear, stark-naked terror, Hathaway thrust his head to the right to see the nightmare quickly reach its fatal finale. But his eyes caught something which triggered frantic thinking.

"The depressurization handle! That's it," he screamed. "Everyone get on oxygen."

Just seconds later, as additional vines began slithering onto the flight deck, knocking bookbags aside like plastic toys, Hathaway grabed the red handle above his head and, with all his might, pulled violently. As paper flew through the air and mist enveloped them, a greasy, huge vine shook eerily as it began to die. Seconds later, it fell on him, knocking him unconscious.

* * *

Bob Hathaway jerked up from his warm, toasty crew bunk and looked around frantically for killer tomato vines as his mind spun back to reality. Rubbing his face and blinking

his bloodshot eyes, he soon realized it was all a dream.

"My God," he murmured, "no one will believe this story, not even if I wrote it up for *The MAC Flyer*. On second thought, at least I handled the situation as best I could. These missions are wearing me down so much I'm hallucinating. I'll have to get more sleep more often."

Laughter, clapping, and numerous voices talking all at once filled the aircraft.

"Guess what Bob?" asked Meyers who had popped his head up into the crew loft and was shaking Bob's foot, ensuring he was awake.

"What's up, Gerry?"

"We won! There's a cease fire. The war is over. We heard it on the BBC, and Roma Control just congratulated us."

Between the chronic fatigue-induced nightmare and this news, Hathaway was stunned. All he could say was, "That's great."

He slowly climbed down from his bed. Special forces troops were dancing around the comfort pallet as the loadmaster served non-alcoholic champagne to everyone.

What a day, he thought as he grabbed his box lunch and made his way to the jump seat. He placed his headset on and said, "So we really won, already?"

"Of course," cheerfully answered Lieutenant Walker.

"What a relief!" added the engineer.

A surge of pride and patriotism, wrapped in war readiness, engulfed his haggard body. The biggest airlift in history had indeed helped produce this spectacular outcome.

If all that happened, maybe people will believe my nightmare and *TMF* may print the story after all, thought Hathaway as he rapidly dug into his healthy-heart box meal. Suddenly, he dropped his lunch and instinctively screamed as he uncovered a big, red tomato underneath his chef salad. Everyone on the flight deck turned to Hathaway.

"Bob, you okay?" asked a shocked Meyers.

"Yeah, I am okay. Just had a nightmare, that's all."

"You want more sleep, Bob?" asked Walker.

"No, I'm okay."

A few uncomfortably silent moments passed until Captain Bob Hathaway finally asked,

"By the way, anyone want my tomatoes?"

Capt. Bossert a 1982 Air Force Academy graduate earned his wings at Reese AFB TX in 1983. He has over 3,500 hours and has been an aircraft commander in the CT-39 and instructor pilot in the C-21A and C-141B aircraft. Captain Bossert recently joined the faculty of the AF Academy after completing his tour at McGuire AFB NJ.

The Heat Is On

Summer Heat Hazards

By Maj. Dale E. Van De Ven
Associate Editor

During summer months, aircrews and flight line workers are exposed to temperatures which can surpass the comfort level of most people. On the parking ramp, concrete absorbs heat and bounces the sun's heat back into our faces, aircraft interiors heat up like furnaces, and temperatures inside the cockpit may rise 60 to 75 degrees F. above ambient temperature. The surface temperature of interior items can get high enough to actually burn skin. A little knowledge about how our bodies cope with heat and precautions we can take will reduce our risk.

Humans are homoiothermal (warm-blooded). That is, we maintain constant body temperature despite wide environmental temperature variations. Body temperature refers to the body's deep structure temperature and, under normal conditions at rest, is maintained between 97 and 99.5 degrees F.

Loss of body heat by radiation and convection is very important when the temperature is low. Radiation and convection, as heat loss mechanisms, cease when air temperature reaches body temperature. Once body temperature reaches 98-99 degrees F., evaporation is the only method the body has to cool off. Evaporative cooling is achieved by heat transfer from secretion and drying of sweat and exhalation of water vapor. This is where humidity comes into the game. If the air is perfectly dry, people who drink enough water and wear proper clothing can survive very high temperatures. As humidity increases, however, evaporative cooling is less effective and heat tolerance decreases. These differences are obvious to anyone who has worked on flight lines in Georgia and Arizona.

Air movement aids evaporation because the layer of saturated air next to the skin is replaced by dryer air. This is why fanning helps cool us off. Sweat dripping off our bodies is useless as a cooling mechanism.

The three most critical effects of heat stress are exhaustion, cramps, and stroke. Heat exhaustion is the result of excessive sweating, usually over several days, with inadequate replacement of water and/or salt. The victim's circulation volume actually drops. He or she will usually weaken, have cool clammy skin, complain of fatigue, and experience slight mental confusion. The individual usually feels excessively drained but not hot. Even mild symptoms can contribute to inattention and improper procedures, increasing risk of mishap and injury. This commonly

hits a person working in an enclosed "sweat box" type environment where the lack of circulating air hinders evaporation and renders sweating ineffective. If you or your troops feel weak and tired, sweat profusely, and are short of breath, get out of the sweat box immediately, drink fluids (not coffee or alcohol), and rest.

We are most prone to heat exhaustion if we are not accustomed to high temperatures (although an acclimatized person can also develop the same symptoms). Inadequate fluid intake is the cause. While sweating is our most common reaction to "unaccustomed" heat, its formation is totally dependent upon fluid availability in the body. With over 60 percent of our body weight in water, we most commonly maintain the balance by simply drinking and eating, then passing the excess through the kidneys.

Balance is the key factor. Think of your body as a bucket with 40 percent of its capacity filled with sand and the remainder water. As the bucket stands in normal atmosphere, water evaporates at a rate totally dependent upon temperature and is not affected by the pail being in direct sunlight. Your goal is to keep the bucket full. When the level drops, adding water once or twice a day maintains the bucket's proper level.

Imagine the emergence of many pinholes along its side. Keeping the quantity at the right level now becomes more of a chore. The fact is, whenever environmental temperatures exceed about 91 degrees F., the only method of maintaining body temperature is through sweating. Under these conditions, your body needs an additional gallon of water per day just to exist; add exercise, and even four extra quarts might not be enough. Furthermore, as in the bucket example, you can't just add it all at once. You've got to feed the body in increments throughout the day. So, if you are flying a couple of sorties on a nice day, make sure you get enough to drink between missions. You may experience cramps in the muscles being exercised if you have inadequate salt intake. These cramps will continue until the salt deficiency is corrected. Generally, a little extra salt with meals is all that is necessary. Be sure you drink plenty of fluids. You can overdo it with the salt, but not fluids.

Cool water, iced or not, is best. Tea and coffee are diuretics, as are most soft drinks. They actually draw more water from the body than they put in.

Heat stroke is the most serious of the thermal stress problems. It is a true medical emergency. Typically, the victim is working hard and generating a metabolic heat load in excess of what his cooling mechanisms can dissipate. This usually occurs in high humidity, rendering sweating relatively ineffective. The core temperature of the body begins to rise, and at a certain point (usually around 103-104 degrees F.), the body's temperature control center in the brain shuts off. Eventually sweating stops altogether, and the temperature really shoots up. The victim's skin is red, hot, and dry. Additionally, the person becomes confused, may have seizures, and can even lapse into a coma. Without immediate cooling, the patient will incur brain damage and likely die. The treatment is to immediately cool the body by immersion, cold blankets, cold water spraying and fanning, and cold water enemas. Don't give fluids if the victim is unconscious. Most important, *get medical aid fast.*

The following conditions have been associated with increased susceptibility to serious complications:

1. Lack of acclimatization.
2. Obesity.
3. Lack of physicial fitness.
4. Fatigue.
5. Lack of sleep.
6. Dehydration.
7. Acute and convalescent infections.
8. Reactions to immunizations.
9. Conditions affecting sweating.
10. Skin disorders.

There are several things a person can do to prevent heat stress.

SLOW DOWN

With physical exertion, more than 75 percent of increased metabolism appears as heat. Muscular exercise can raise the body temperature four degrees or more. Plan extra time to preflight, and if you have to get to a spare aircraft and are hurrying to make a takeoff, be extra careful.

EAT SENSIBLY

For most people, salting food provides enough salt (about three grams per day). Supplemental salt should only be taken on the advice of the flight surgeon. During hot weather, low protein diets are best since protein increases heat production. Sorry, steak lovers.

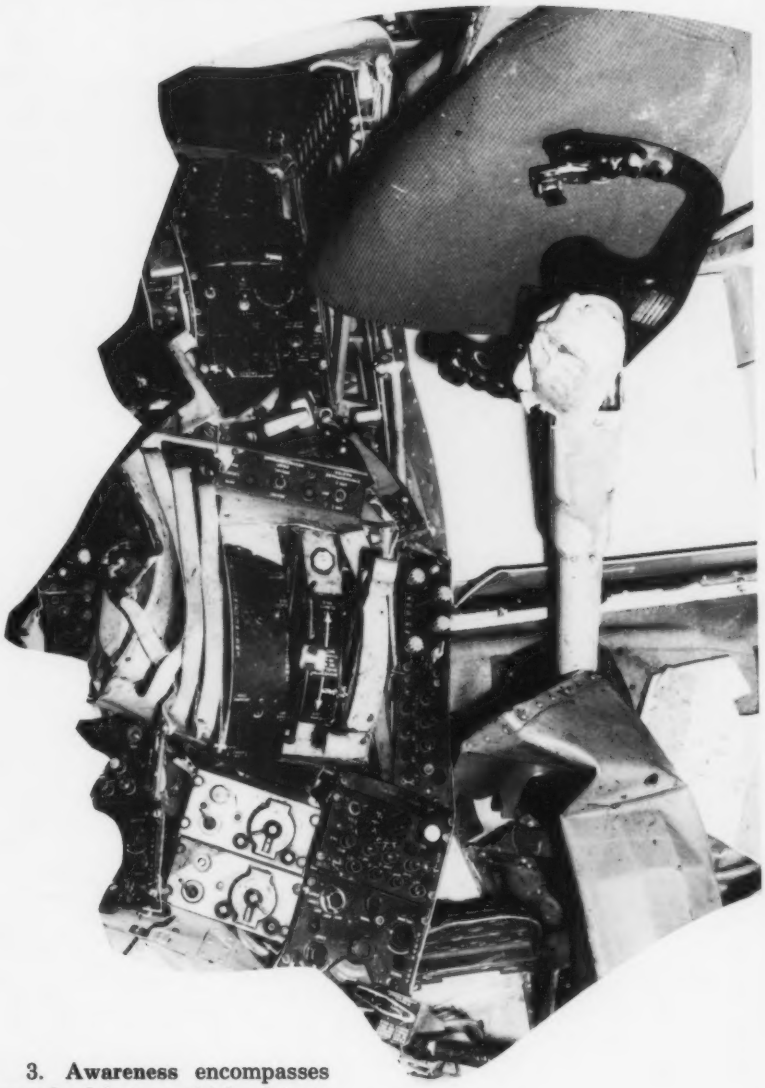
DON'T OVERDO IT

If you start to feel any signs of heat stress, quit, get to a cool place, drink some fluids, and if you really feel bad, see the flight surgeon.

Heat is a part of everyday operations and, for some of us, a welcome change from cold and damp of winter. With proper precautions, we can continue to do the job assigned without undue risk. ★

Why Did You Think You Could Do That?

By Maj. Thomas A. Farrier
Chief, Human Factors Studies
Hq MAC/QSSF



As the Air Force moves deeply into the study of human factors, we're finding it tough to untangle the complex web of behavioral and personality traits that make crewmembers tick. In particular, it's sometimes a real chore to identify the root human factor—the "smoking gun" in a human factors mishap sequence. "Why Did You Think You Could Do That?" is a question requiring some insight to answer, since doing so means digging into how we make decisions and exercise "judgment" in given situations.

It's important to note that there are a number of "human performance factors" (as defined in AFR 127-4, the safety bible) that come into play when a given course of action is evaluated and selected. It's also important to nail down the distinctions among them.

1. **Decision-making** itself is identified as an individual performance factor. In the narrow sense of the safety world, this term describes an "option selection" ability. When properly exercised, a person uses his/her background, knowledge, and experience to develop a course of action.

2. **Judgment**, when used to talk about human factors, embodies the attributes of common sense, prioritization, foresight, and perspective.

3. **Awareness** encompasses several subfactors which relate to the quality of an individual's perceptions. The one of greatest concern in the decision-making process is complacency.

4. Finally, **knowledge** which may not seem to fit into this list as a root cause of a faulty decision

or execution is, however, a human performance factor which considers several deficiencies. Foremost, is inadequate learning which can be the underlying cause of an error due to overconfidence.

Safety investigators and crewmembers looking for personal insight need to recognize the relationships that bind, but distinguish these factors from each other. It's usually the sum total of several factors, all interacting, which lead people to take a particular course of action. It's tough sometimes to identify a single root cause due to the complexity of interaction. For example, you've probably noticed that "knowledge" shows up both as a root performance factor and as an important element in the synthesizing process the Air Force labelled "decision-making." Gathering inputs for evaluation and action depends on both adequacy of assessment *and* correctness of inputs themselves. Incomplete or erroneous knowledge is a deficiency in itself. If this deficiency can be detected as a part of an individual's (or crews') overall deliberations, a deficiency exists. As you'll see, when the possibility exists for an incorrect decision, a variety of reasons become evident for choosing that option.

The remainder of this discussion focuses on the specific question asked in the title: what leads a person to misjudge his or her ability to perform a specific task? Setting aside the very subjective element of pure ego (which sometimes is the sole reason pilots fly good airplanes into the ground), most of you would probably be inclined to raise a long laundry list of possible contributing factors—fatigue, job-related stress, etc. Although it's tempting to analyze a chain of events at just such a microscopic level of detail, you need to work from the top down.

Faulty decisions can usually be traced to poor consideration of circumstances, insufficient readiness to perform, or a combination of the two. Once you've established which of these broad areas of deficiency comes into play, you can start dissecting specifics. It's essential to take that second step. Only through a complete understanding of the exact performance factors contributing to a mishap can we successfully develop corrective action to prevent a similar mishap from occurring.

Here's an example: A crew out in the system is headed home. Checking NOTAMS, they discover the first 1,000 feet of their home runway is closed. They agree that losing 1,000 feet of pavement won't affect them at the end of a long leg. They fly home, land apparently uneventfully, then wind up going off the end of the runway during rollout.

What happened? Break it down as described above and you'll see a specific line of inquiry puts itself together:

- How was their *consideration of circumstances*? the objective criteria would seem to support the call to proceed. Since they weren't told to divert and the airfield itself wasn't closed due to runway work in progress. (Don't forget to consider any possible fatigue involvement at the time of the decision and time of landing, since the crew's condition is itself part of the environment that should've been taken into account.)

- Was the crew *ready to fly* the kind of approach and landing this restriction required? If you assume they weren't overly fatigued or stressed, "readiness" in this case boils down to two attributes: mindset and ability.

Did they think they could make the landing since they were familiar with the airfield (complacency)? Was the pilot ever taught how to make a landing to a significantly displaced aimpoint (overconfidence based on incomplete knowledge)? Did the crew carefully compute their landing weight and roll, see things were going to be close, but decide to press on anyway (altered perspective, courtesy of "get-homeitis")? These three different scenarios call for three different fixes; from the notorious but necessary "brief the crews;" to a schoolhouse syllabus change; to a change in local procedures reducing maximum authorized landing weight for the duration of the airfield construction.

The test of corrective actions for this type of mishap is whether crews are better prepared, under similar conditions, to make their next decision. In this example, everyone briefed on the landing mishap got another little tidbit added to their common core of knowledge; new CCTS graduates could become more familiar with a potentially critical procedure and supervisors could ease the temptation to press by authorizing crews to refuse a pallet or two while civil engineering is doing its thing at home.

The bottom line is that human performance mishaps almost always involve complex interactions among different factors. However, at the exact moment a human error is made, setting an irreversible tide of events into motion, someone most likely made a choice—conscious or unconscious, deliberate or forced—but a choice, nevertheless. Understanding some of the factors leading you to your own choices should improve the quality of your personal selection process. As mentioned in a previous *MAC Flyer* human factors article (Jan 91), *insight* is one of the most important tools to develop in your quest to be a better, safer flyer. Anything you do that builds your personal knowledge and experience is also sure to make you a better, safer decision-maker.

Quality Stuff

Striving for Improvement

By Lt. Col. John E. Hayden
Deputy Director, Quality Services

Don't read this article (unless you care about doing your job better and making your life easier)! Why? Because what follows centers on quality improvement and how it relates to safety. Safety and Quality are two topics you have probably heard about, ad nauseum, but may have difficulty linking the two. After all, Quality is great for *Ford, Motorola, Ratheon,* and *General Dynamics*, but what does it have to do with you? You fly airplanes for a living—you do not produce gadgets, objects, or widgets to measure, weigh, or modify to meet a quality standard; therefore, it may be difficult to see the relationship between safety and quality even though they are tightly interwoven.

Air Force Reg 127-2 states, "DOD Policy requires an effective, aggressive, and integrated safety program." It goes on to say "Mishap prevention is basic to keeping a combat ready posture. Commanders ensure that positive prevention measures are used in achieving the highest possible state of readiness." Within these few sentences are the core elements of the MAC Quality Improvement (MQI) process; namely top leadership support and direction, employee involvement, and continuous improvement.

There should be no doubt in anyone's mind that both safety and quality have top leadership commitment and support within the command. General McPeak, Air Force Chief of Staff, announced at CORONA SOUTH in March the Air Force goals for 1991 are: Fitness, Care of the Environment, and Quality. General Johnson and the MAC staff echoed the Chief's concerns and had already begun intensifying their support for safety when they made a concerted effort to push authority, responsibility, and accountability down to the lowest practical levels throughout the command. In a Quality context, it's called "empowerment." In a safety context, it's the same thing—giving each and every individual the necessary tools and authority to prevent mishaps and thereby enhance readiness. Their long-term commitment was also evident when they refocused and renamed the MAC Inspector General as the Deputy Chief of Staff, Quality Support and Readiness. We have seen several initiatives evolve from that change, all with the backing of General Johnson and commanders down the line. Commitment and support, however, are merely words unless our people are involved.

President Truman is famous for the sign, "The Buck Stops Here," proclaiming his understanding and acceptance of responsibility for events within his control. The same holds true for safety and Quality. Both are totally dependent upon the involvement of everyone in the organization for success. Both also require each individual be properly trained to do the job and empowered to make changes as the situation warrants. Training is essential to safety. As a pilot you were extensively trained to understand aerodynamics, perform takeoffs and landings, and handle inflight emergencies. As an engineer you studied aircraft systems, computed takeoff and landing data, solved electrical malfunctions, and managed fuel consumption. As a loadmaster you were trained on the location of safety equipment, proper operation of the aircraft winch, and the technicalities of loading a piece of equipment. You use these skills every time you fly. Quality training will expand upon the knowledge and experience you already possess and give you a broader "process" orientation. It will give you additional tools and methods to further improve the flight process. Is there a better way to move patients, passengers, and cargo? There was a better way during DESERT STORM and there will be an even better way tomorrow. All of us have to take a close look at how we do our jobs if we are to reach our goal of safe, efficient, and effective airlift. No one knows how to do that better than you because no one knows your job better than you.

Continuous improvement is a more elusive concept with which to deal. Simply stated, continuous improvement is a common sense way of viewing the work we do. Remember, our objective is to *prevent* mishaps and the attendant loss of life, money, and resources which take away from readiness. Can it be

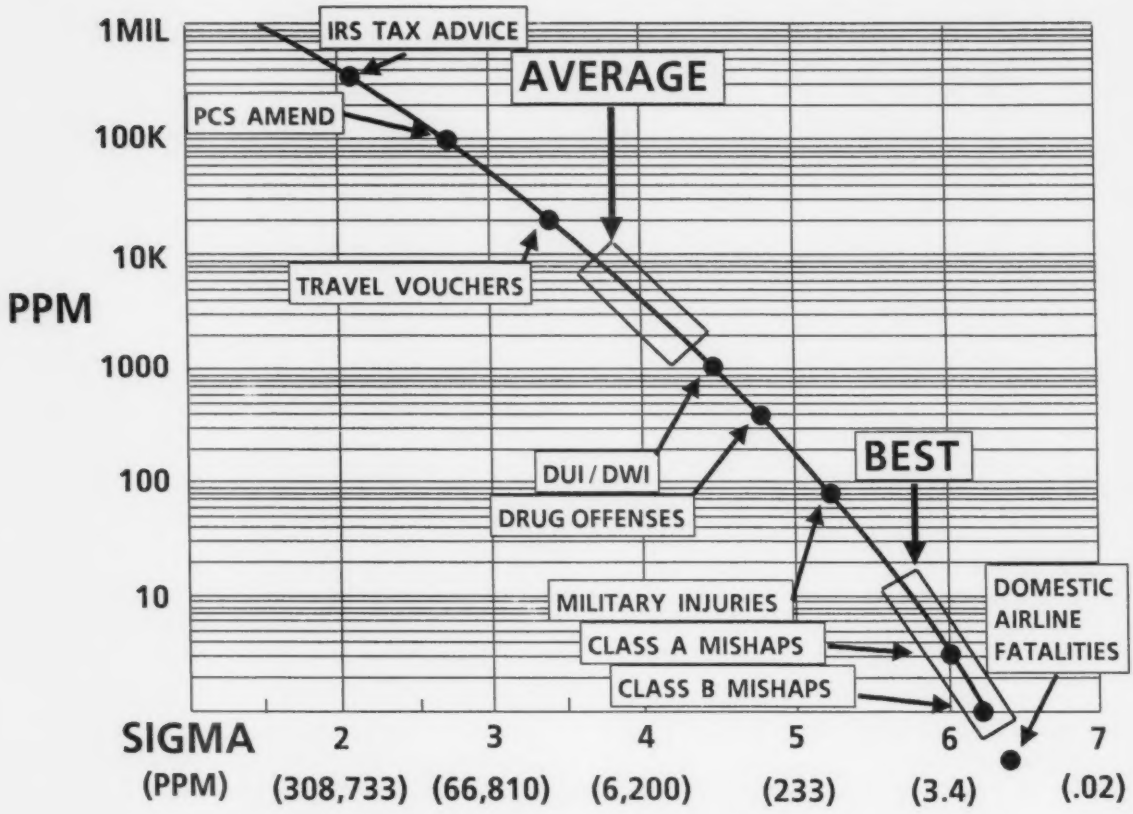


FIGURE 1

done? After all, are not some mishaps acts of God that simply cannot be foreseen or prevented? For an answer, consider the information displayed in Figure 1. The chart depicts recent statistics and illustrates how we are doing relative to an objective of Six Sigma (3.4 errors per million) or virtual perfection. For example, it tells us that for every one million PCS orders we publish, we amend 125,000 of them. This costs the command in terms of personal inconvenience, wasted paper, and unnecessary delays in relocation. Note also that, in regard to Class A and B mishaps, we are close to achieving our objective of mishap-free flying. Realize too that every flying hour represented was flown in a different area of the world, by a crew of varying experience, in variable and unpredictable weather, and all subject to random acts of God. That we have done as well as we have is testimony to the effectiveness of our safety process and to the ingenuity and professionalism of our aircrews. It also shows what can be done when sufficient resources and attention are directed to a particular event. Our mishap rates are low, in part, because neither the Air Force nor American society will accept anything less than perfection when transporting people and their families from point A to point B. Therefore, we pay a great deal of attention to fine-tuning our training programs and investigating mishaps (when they do occur) to find the root cause. Thereafter we apply corrective measures to prevent the same occurrence from happening again. In short, we attempt to improve the process and do things better.

However, we can *really* only do better if we make a conscious decision, as individuals, to apply fundamentals of safety and Quality in our daily work environment. The result will be a better Military Airlift Command and one capable of executing its responsibilities and missions without the "lesson learned" we sometime have to relearn. Safety and quality go hand in hand. Make no mistake about it—when you talk safety, you're talking "Quality Stuff."

Flying-Hour Milestones

10,000

22 MAS
SMSgt. Martin H. Bartling
MSgt. Harry C. Cashwell

139 TAG
Lt. Col. Carl C. Firkins

512 MAW
CMSgt. Steven R. Pennypacker

7,500

39 TAS
SMSgt. Ronald L. Fritts

75 MAS
CMSgt. Donald M. Williamson

86 MAS
TSgt. Edward Velasquez
SSgt. Douglas M. Dean

312 MAS
Lt. Col. Patrick R. Brooks
Lt. Col. John T. Halliday
Lt. Col. William D. O'Hearn

772 TAS
MSgt. Robert V. Schronk

911 TAG
Lt. Col. Robert E. Gaughan, Jr.

5,000

HQ MAC/XO
Maj. Edward M. Cook

22 MAS
Capt. Michael A. Barrett
SSgt. Christopher L. Wike

60 MAS
Col. William J. Begert/CC

75 MAS
Lt. Col. Kenneth H. Davis
SMSgt. Philip H. Sanborn
MSgt. Howard E. Lewis

86 MAS
Lt. Col. Frank H. Baily
Lt. Col. William T. Griffin
Lt. Col. Phillip W. Spiker
CMSgt. Edward H. Pugh
MSgt. Tom K. Louie
TSgt. Danny R. Conroy

167 TAG
MSgt. Wayne E. Helsley

189 TAG
Lt. Col. Ronald E. Stricklin
Lt. Col. Rodney B. Frisbee
Lt. Col. Danny R. Smith
Maj. Robert L. Hill
Maj. Donley R. Hoover
Maj. Wendel J. Msall, Jr.
CMSgt. Richard M. Green
CMSgt. George W. Hoops
CMSgt. Emmett H. Lane, Jr.
CMSgt. Thomas D. Tilley
MSgt. Jimmy L. Richardson
MSgt. Leon A. Schlosser
MSgt. Robert R. Tanner

304 ARS
MSgt. David M. Stevens

312 MAS
Lt. Col. Leonard P. Bochicchio
Lt. Col. Stephen W. Bowcock
Lt. Col. Rodney C. Herring
Lt. Col. Arthur J. Intemann
Maj. Michael J. Davenport
Maj. Robert A. Lenz
Maj. Michael H. Rolbeck
Maj. Ross L. Wilhite
SMSgt. Robert Colon
SMSgt. John Megyeri, Jr.
MSgt. William T. Hagen
MSgt. James E. Rodriguez

433 MAW
MSgt. Stanford E. Shobert

772 TAS
SSgt. Raymond P. Higgins

911 TAG
TSgt. Richard H. Dapprich

2,500

ARS
Lt. Col. Larry A. Helgeson
Maj. Dennis B. Eddy

16 TATS
Maj. Lawrence B. Morton
Maj. Stuart E. Takahara
Capt. John A. Duresky

40 TAS
Capt. Joel Taylor
Sgt. Kevin Gabor
Sgt. Reginald Mickel

41 MAS
Capt. David C.Arthur
Capt. James D. Clifton
Sgt. Christina L. Simpers

76 MAS
Maj. Mark E. Stearns
Capt. Paul V. Harrison
SSgt. Richard D. Barrett
SSgt. Lloyd D. Lesinger

95 TAS
Capt. Jon S. Kubicek
Capt. Robert V. Mazier
Capt. Richard J. Photinos

167 TAG,
Capt. Kevin R. Miller

305 ARS
TSgt. Duane A. Breen

440 TAW
Capt. Joseph C. Davis

443 MAW
TSgt. Richard B. Hendrickson

772 TAS
Maj. Roger H. Bell
Maj. Craig L. Murra
Maj. Daniel L. Perry
Capt. Daniel V. Boughton
Capt. Glen W. Bourne
Capt. Timothy K. Higa

773 TAS
Capt. Benjamin W. Beeson
Capt. Rick Denzer

911 TAG
TSgt. James E. Bortmes

1,000

ARS
Capt. Timothy S. Davis
Capt. Lawrence W. Friend
1st Lt. Lawrence McLaughlin
SMSgt. Malcom C. Hassler
Sgt. Alexander L. Abbey
Sgt. Christopher M. Wise

1st Cav Div
Capt. Glenn H. Hecht
Capt. Scott A. Howell
Capt. Scott R. Swanson

Ranks and units are those at time of award.

As of 30 Septe

MAC UNIT MISHAP-FREE FLYING YEAR MILESTONE AWARD

40 YEARS OR MORE

1 MAS
64 TAS (AFRES)

30 YEARS THROUGH 39 YEARS

1 HS
6 MAS
14 MAS
73 AAS (Assoc)
76 MAS
96 TAS (AFRES)
97 MAS (Assoc)
115 TAS (ANG)
137 TAW (ANG)
156 TAS (ANG)
167 TAS (ANG)
180 TAS (ANG)
183 MAS (ANG)
185 TAS (ANG)
301 ARRS (AFRES)
303 TAS (AFRES)
305 ARRS (AFRES)
312 MAS (Assoc)
313 MAS (Assoc)
327 TAS (AFRES)

25 THROUGH 29 YEARS

53 MAS
55 WRS
58 MAS
63 TAS (AFRES)
130 TAS (ANG)
136 TAW (ANG)
142 TAS (ANG)
144 TAS (ANG)
181 TAS (ANG)
187 TAS (ANG)
302 TAW (AFRES)
328 TAS (AFRES)
403 TAW (AFRES)
459 MAW (AFRES)
728 MAS (Assoc)
756 MAS (AFRES)
758 TAS (AFRES)
1467 FCS

20 THROUGH 24 YEARS

4 MAS
9 MAS
36 TAS
53 MAS
53 WRS
55 AAS
68 MAS (AFRES)
86 MAS
94 TAW (AFRES)
135 TAS (ANG)
143 TAS (ANG)
146 TAW (ANG)
164 TAS (ANG)
300 MAS (Assoc)
301 MAS (Assoc)
315 MAW (Assoc)
326 MAS (Assoc)
335 MAS (Assoc)
337 MAS (AFRES)
356 TAS (AFRES)
357 TAS (AFRES)
445 MAW (Assoc)
446 MAW (Assoc)
700 TAS (AFRES)
707 TAS (AFRES)
729 MAS (Assoc)
730 MAS (Assoc)
732 MAS (Assoc)

10 THROUGH 19 YEARS

7 MAS
8 MAS
11 AAS
17 MAS
17 TAS
18 MAS
20 AAS
20 MAS
21 TAS
30 MAS
Det 3, 37 ARS
Det 5, 37 ARS
Det 8, 37 ARS
Det 9, 37 ARS
Det 10, 37 ARS
Det 24, 37 ARS
41 TAS
50 TAS
56 ARS
56 MAS
61 TAS
62 MAW
71 ARS
89 MAW
Det 1, 89 MAW
102 ARRS (ANG)
109 TAS (ANG)
133 TAW (ANG)
137 MAS (ANG)
139 TAS (ANG)
155 TAS (ANG)
158 TAS (ANG)
304 ARRS (AFRES)
326 MAS (Assoc)
345 TAS
439 MAW (AFRES)
512 MAS (Assoc)
514 MAW (Assoc)
616 MAG
701 MAS (Assoc)
702 MAS (Assoc)
707 MAS (Assoc)
708 MAS (Assoc)
709 MAS (Assoc)
731 TAS (AFRES)
757 TAS (ANG)
815 TAS (AFRES)
1400 MAS
Det 1, 1400 MAS
Det 2, 1400 MAS
1401 MAS
Det 1, 1401 MAS
Det 2, 1401 MAS
Det 3, 1401 MAS
Det 4, 1401 MAS
Det 3, 1402 MAS
1550 FTS

OF HONOR

MAC UNIT MISHAP-FREE FLYING-HOUR MILESTONE AWARD

850,000 HOURS

76 MAS

700,000 HOURS

14 MAS

650,000 HOURS

1 MAS
6 MAS

550,000 HOURS

4 MAS

500,000 HOURS

62 MAW

450,000 HOURS

86 MAS
137 TAW (ANG)

400,000 HOURS

53 MAS
89 MAW
1401 MAS

350,000 HOURS

136 TAW (ANG)

300,000 HOURS

11 AAS
445 MAW (Assoc)

250,000 HOURS

9 MAS
302 TAW (AFRES)
314 TAW
375 MAW
437 MAW
438 MAW
446 MAW (Assoc)
459 MAW (AFRES)
1400 MAS

220,000 HOURS

36 TAS

200,000 HOURS

17 MAS
146 TAW (ANG)
315 MAW (Assoc)

180,000 HOURS

55 WRS

150,000 HOURS

7 MAS
8 MAS
18 MAS
20 MAS
21 TAS
41 TAS
50 TAS
53 WRS
61 TAS
345 TAS
439 MAW (AFRES)
514 MAW (Assoc)

140,000 HOURS

1 HS
97 MAS (Assoc)
183 MAS (ANG)
185 TAS (ANG)
313 MAS
327 TAS (AFRES)

120,000 HOURS

64 TAS (AFRES)
96 TAS (AFRES)
156 TAS (ANG)
167 TAS (ANG)
180 TAS (ANG)
183 MAS (ANG)

100,000 HOURS

13 MAS
30 MAS
34 TATG
41 MAS
73 AAS (Assoc)
115 TAS (ANG)
130 TAS (ANG)
139 TAS (ANG)
142 TAS (ANG)
180 TAS (ANG)
187 TAS (ANG)
312 MAS (Assoc)
337 MAS (AFRES)
374 TAW
443 MAW
512 MAW (Assoc)
728 MAS (Assoc)
729 MAS (Assoc)
758 TAS (AFRES)
Det 1, 1401 MAS
Det 2, 1401 MAS
1467 FCS

80,000 HOURS

135 TAS (ANG)
158 TAS (ANG)
164 TAS (ANG)
181 TAS (ANG)
300 MAS (Assoc)
328 TAS (AFRES)
335 MAS (Assoc)
356 TAS (AFRES)
701 MAS (Assoc)
730 MAS (Assoc)
732 MAS (Assoc)
756 MAS (AFRES)
Det 2, 1401 MAS

70,000 HOURS

Det 2, 1400 MAS

60,000 HOURS

17 TAS
55 AAS
68 MAS (AFRES)
143 TAS (ANG)
144 TAS (ANG)
155 TAS (ANG)
303 TAS (AFRES)
305 ARRS (AFRES)
357 TAS (AFRES)
700 TAS (AFRES)
702 MAS (Assoc)
707 MAS (Assoc)
815 TAS (AFRES)

50,000 HOURS

10 MAS
16 TATS
30 MAS
37 TAS
57 MAS
58 MAS
62 TAS
137 MAS (ANG)
435 TAW
436 MAW
616 MAG
773 TAS
Det 1, 1400 MAS
1551 FTS

40,000 HOURS

22 MAS
Det 5, 37 ARS
55 AAS
56 MAS
301 MAS (Assoc)
304 ARRS (AFRES)
708 MAS (Assoc)
709 MAS (Assoc)
Det 1, 1400 MAS
Det 3, 1401 MAS
Det 4, 1401 MAS
Det 3, 1402 MAS

Excellence In Airmanship

TSgt. Michael L. Hostetler and SSgt. Keith B. Thompson, 62d Tactical Airlift Squadron, Little Rock Air Force Base AR, were loadmasters on a C-130 crew tasked to airdrop basic airborne trainees on 26 Dec 90. Under normal circumstances, this type of mission calls for the support of three C-130s. Due to MAC's heavy Desert Shield requirements, only one aircraft was scheduled to fly this one-day mission consisting of 15 airdrops.

Toward the end of the aircrew's duty day and after about 45 passes, a student jumper inadvertently deployed the parachute of a safety monitor inside the aircraft.

TSgt. Michael L. Hostetler

SSgt. Keith B. Thompson

Sergeants Hostetler and Thompson immediately dove on the rapidly opening canopy before it could be caught in the windstream. Sergeants Hostetler and Thompson's quick actions prevented a possible tragic mishap and well deserve the MAC Excellence in Airmanship Award. Congratulations from *TMF*.

C-137 aircraft ready on the flight line.

C-20 aircraft waiting for crew show.

C-137 and C-20 Aircraft

"Trust one with experience."

By Maj. Stephen E. Behr
Associate Editor

Having flown the Lockheed "JetStar," also known as the C-140B, across Europe and Southwest Asia, I looked forward to the opportunity to get a close look at its replacement—the C-20 Gulfstream III—and another distinguished visitor (DV) aircraft, the C-137. These aircraft are part of the 89th Military Airlift Wing fleet.

"Many people believe we operate with the best and latest state of the art equipment; that isn't completely true," began Col. Edward M. Bullard, Wing Commander. "The C-20 is the newest aircraft in our fleet, but I have three C-137B aircraft that are '58 models. They are perhaps the last Boeing 707-100s still flying in the world. A couple of those '137s have over 50,000 flying hours. Keeping them going takes a lot of initiative from the folks who maintain and fly them.

"We have always empowered our aircraft commanders. They are given a mission setup and are totally responsible for arranging the mission and execution and whatever occurs after the mission. Aircraft commanders are held accountable but we also do a good job training aircraft commanders. Then we let them make the decisions. When we provide the very best training we feel confident they'll make the correct choices."

Scheduling C-20 and C-137 missions begins when a user contacts the Special Air Missions office (CVAM) at the Pentagon. The CVAM office has a computer link with 89 MAW/DOO, through which they schedule missions by specific aircraft tail number. Scheduling is done this way since some aircraft have different interior configurations and communications capabilities. Wing current operations then electronically passes mission information to the 1st Military Airlift Squadron (MAS) for C-137 missions and to 99 MAS for C-20 and C-9 missions. There are no channel or routine missions; each mission is different. Generally, the C-137s fly longer trips than the C-20s. The C-20s fly a mixture of short and long duration trips.

The five C-137 Stratoliners are modified versions of the Boeing 707 commercial intercontinental airliners. In most of them, the passenger cabin is divided into three sections. The forward area has a communications center, galley, lavatory, and an eight-seat crew compartment. The center portion is designed as an airborne headquarters with conference tables, swivel chairs, television with VCR, and two convertible sofa-bunks. The rear of the cabin contains double reclining passenger seats, tables, galley, two lavatories, and closets. Additional partitions may be installed throughout the cabin for added privacy. The "B" models have a range of around 5,000 miles, and the "C" models 6,000 miles; both cruise at 462 knots.

The C-20 Gulfstream III is a twin-engine, turbofan aircraft acquired to fill the airlift needs of DOD officials and other high-ranking government personnel. Seven C-20Bs fly special air missions for the 89 MAW and three C-20As fly OSA missions with the

C-20 pilots, Capts. Bob Fowler (right) and Fred Cainciolo, mission planning.

C-20 pilot, Capt. Amy Russell checking the computerized airport atlas during flight planning.

Lt. Col. John Bly and Capt. Andy Tracey, 89 MAW/DOF, planning a C-137 mission.

58 MAS, Ramstein Air Base, Germany. The primary differences between the C-20A and B models are electrical system and avionics packages; the C-20B is equipped with electronic flight instrumentation system (EFIS). The C-20's passenger area is divided into two compartments. The forward area has two swivel chairs and a sofa, and the aft has conventional seating, a galley, lavatory, and storage areas. The C-20 has a long range cruise speed of 442 knots, range of 3,650 nautical miles, and maximum takeoff gross weight of 69,700 pounds.

Missions are first passed by CVAM as tentative, from one week (sometimes less) to nearly two months prior to departure. Mission planners review the times and provide feedback if flying or arrival times are not feasible. Missions are confirmed anywhere from one week to one day prior to departure.

Once a C-137 mission is confirmed, the real action begins. A crew is scheduled against the mission and unit navigators begin detailed planning. Planners send diplomatic clearance and overflight messages; check all en route times from block out to block in so the DV will arrive on schedule. During planning for this type of "honors arrival," even taxi time is accounted for.

The C-137 pilots study airfields, approaches, and station files. Lt. Col. Carroll Huneycutt, a C-137 pilot, explained, "Station files provide a corporate knowledge base for the crews. We get everything we need to know about facilities; problems of servicing, preferred routings, type of approach to expect, and where we parked last time we were there. Even the taxi route—very important when you're trying to make a block time to the second—is considered. All this information is being added to the computerized scheduling system we use.

"While pilots and navigators work on the route and times, Inflight Passenger Service Specialists (Stewards) meet with the DV's contact to determine meal menus and pick up funds for buying ingredients for those meals. Stewards also arrange for inflight feeding of crewmembers.

"The morning prior to departure, everyone gets together for a crew and intelligence briefing. All missions departing the United States are augmented, so the briefing room is filled with 18 to 22 crewmembers (three pilots, two navigators, two flight engineers, a crew chief, two communications systems operators, six stewards, and security police as needed) depending on requirements. The augmented crew gives us a 27-hour crew duty day when flying CVAM-directed missions. It also gives new copilots a chance to gain experience in all theaters of operations and learn the pacing and development of management skills needed to keep a 22-person crew moving in the same direction.

"After the group briefing, pilots and navigators sit down and go over the entire route of flight for the mission and recheck all message traffic and replies. The copilot checks out a set of Jeppesen approach plates for the area the mission will transit.

"The stewards depart and buy all the food. The day of departure the crew shows at the aircraft two hours prior to takeoff. The crew chief and maintenance folks taxi the aircraft from parking to the DV spot. When the stewards have a lot of food, special china, or gear to put on board, they may show three hours prior to load the aircraft. They get assistance from the 93d Aerial Port Squadron.

"Thirty minutes before the DV's scheduled arrival time, we have stations time—everything is done. We run the checklist, put the clearance on request, and get everybody sitting down and strapped in so we're ready to start engines and go when the DV gets on board."

Once the crew starts engines, the pilots concentrate on a safe and smooth flight. Navigators focus their efforts on time and speed control so arrival will

be on schedule. Capt. Colleen Ryan, a C-137/C-135 navigator explained, "Our job focuses more on pre-mission planning, mission following, and making block times than on basic navigation. The C-137s have either triple INS or dual INS with LORAN; we still use a sextant, but not often. Our main goal is to get the aircraft to the top of descent for the on-time arrival. It may mean flying as fast as possible for the whole flight or slowing down to 250 knots for a couple of hours—whatever is needed to arrive on time."

Colonel Huneycutt explained what happens at each stop. "The first thing we do after we land and the DV has departed is get the airplane ready to go again. Even though we're not on alert, we are in crew rest or released until scheduled departure time; we're ready to depart if the DV must leave early. Within 30 minutes after we land, the airplane is refueled, cleaned, and ready to fly again if needed."

A mission confirmed for a C-20 is passed to 99 MAS scheduling. Lt. Col. Greg Zeno, 99 MAS Commander explained, "The C-20s have a standby crew so they often pick up short-notice commitments. When a mission is tasked, CVAM passes a point of contact, an itinerary, DV name and code, special requirements, and communication requirements. Most of the DVs are Code 2s, some Code 3s, and some Code 1s who are usually visiting heads of state. DV Code 3s are the lowest ranking folks who fly with us.

"When the mission is confirmed, the aircraft commander and steward get in touch with the point of contact. The aircraft commander confirms the itinerary and passengers, while the steward determines meal and menu requirements. One of the pilots drafts all message traffic for diplomatic clearances and aircraft services for the mission.

"The pilots use a commercial flight planing service to generate computer flight plans for the mission and determine where fuel stops are needed, if not already included in the itinerary. To use the flight planning computer, the pilot enters the tail number, fuel weight, passenger and baggage weight, and special route information. The flight plan prints the route of flight as it should be entered on an international flight plan, waypoints and coordinates, and a fuel plan. Crews usually get an updated flight plan the morning of departure. When we're out in the system, we call the company (Jeppesen) and have the computer flight plan sent by fax to the hotel where we're staying.

"As a pilot, you know that when you leave on a mission, everything that had to be done to make the mission work is done because *you* did it. You didn't have to rely on someone in Current Ops to tell you the PPR number and then hope messages were sent. It's a lot of hard work but it's a good feeling to know everything is done when you leave.

"You'll notice a change around here in the number of captains assigned to the squadron. In the past, we hired majors and lieutenant colonels, all with vast experience, who remained here until retirement. Now, we are looking for captains with 2,500 hours of flying experience and 300 hours of instructor time. They're not here for an entire career; it's now a broadening assignment. Folks are here to get a unique flying experience, then go on to bigger and better things. Some of the captains hope to get follow-on assignments to the C-17."

The day after meeting Colonel Zeno, I flew with a C-20 crew on a training mission. Lt. Col. Robert Davis, a flight examiner, flew as the IP and Maj. Darrell Manning, 89 MAW Chief of Safety, flew as the student. Prior to the briefing, Colonel Davis filled in more details of the C-20 mission.

"The takeoff and landing performance of the C-20, combined with its size, let us use many smaller airports with short runways not available for use by C-9s or C-137s. With full fuel, we can go non-stop to Europe and stop once on the way back. Combine that with an 18-hour crew day on CVAM-directed missions and we provide users with a great deal of flexibility and comfort.

"We fly many local training flights away from the Washington area; that gets us away from some of the congested airspace and air traffic and allows practice on shorter runways we might see on missions."

The flight to Harrisburg began with a heavyweight simulated-emergency return to Andrews. After the full stop, the mission departed in earnest for Harrisburg, Lancaster, and Reading PA. The crew demonstrated some of the many EFIS features during the flight when the IP failed the pilot's HSI. The pilot switched his HSI to a presentation at the radar display position. One simulated emergency that didn't occur was an electrical fire—there is no electrical fire checklist. The electrical power monitor panel is so automatic and reliable at switching buses and load monitoring that an emergency procedure for electrical fires wasn't required when the Gulfstream received FAA certification.

After a couple of hours of bouncing in the turbulence of a spring day, we returned to Andrews for a smooth landing. Maintenance folks were busy preparing the aircraft to fly again as we departed.

During the flight and visit, a recurring theme became evident; "Safety, Comfort, and Reliability," all in that order. The folks who fly and maintain 89 MAW aircraft live by the words and motto, "Trust one with experience."

Letters to the Editor

Your Opinion

Editor's Comment: This unsolicited letter was received the last week of March. It's one pilot's opinion, intended to generate scholarly discourse on human factors and training. The opinions stated in this letter do not necessarily reflect those of *TMF*. We welcome any responsible viewpoints and will reserve space in future issues for all professional fliers who feel the same way, or have other comments concerning human factors or training.

Dear Sir,

I have just finished reading the September 1990 issue of *The MAC Flyer*—full of very good articles. "Reflections of Nature" was excellent—the item, of course, is to remember to "fly the airplane."

The new generation cockpits (so called glass cockpit) with sophisticated flight management systems are, in my view, breeding an insidious complacency/laziness in airline crews in the rigid atmospheres of SOPs—insisted upon to the detriment of airmanship. I've seen more examples of poor flying ability and lack of old-fashioned, hands-on pure flying skills in the past three years in glass cockpits than I have ever experienced before. (I fly as captain on B737-400 and -500 aircraft but have extensive experience on other types, military and civil, with around 21,000 hours.)

The fantastic reliability of today's newer aircraft and excellent instrumentation mean real emergencies are very rare. This saves many airline pilots from becoming a statistic.

Blind reliance on flight director steering—which means inevitable tunnel vision—is common. I've flown with copilots who have never "hand flown" a 737 above 5,000 feet—because *it is discouraged* by the airline. Certainly, most pilots in my big company would never consider a raw data, handflown ILS because company policy is to use all available automatics, at all times, since it is considered "safer"! The logic is amazing and alarming.

As a contract pilot flying for a European company, my First Officers are of a different nationality. I was hauled over the coals recently when a F/O reported me as *nonstandard* because I did a raw data SID and practiced handflying in cruise at 33,000! His complaint was that I increased his work load and that, having never flown raw data, he didn't know how to "monitor" my flying. When you have cadet pilots with a total of 200 flying hours going directly into the copilot seat of glass cockpit types, with all simulator training being placed on automatics, and never *required* to handfly except for disconnecting on late final at 500 feet, you can see the "new breed" are not pilots in the real sense. Heaven help the pax if the captain is incapacitated or a compound emergency on a black, ADF only, night occurs.

The blame rests squarely on training departments and instructor pilots. I believe that at least 35 percent of climbs/approaches, etc., should be on raw data, non-automatics, in order to retain handling skills. I've ridden jump seats of many airlines in Europe the past five years, and I'm dismayed at the almost total use of automatic pilots for circuits and landings, climbs/descents. A fully automatic SID—connecting the autopilot at 500 feet AGL—is normal. Very wide, expansive visual circuit joining is done using automatics. Fuel burns for these circuits are ignored; which rather decimates the so-called advantages of FMS automatics in the cruise.

I am sure this does not happen in the USAF. The rigidity and complete blind acceptance of airline pilots I observed is a product of poor training—instructors are not setting good examples of "flying the airplane," and many would never consider practicing basic hand flying because of complaceny.

I am certain the majority of today's new generation airline pilots may be computer wizards, but cannot "fly the aircraft." Their counterparts of 10 years ago were much more skillfull in the basics.

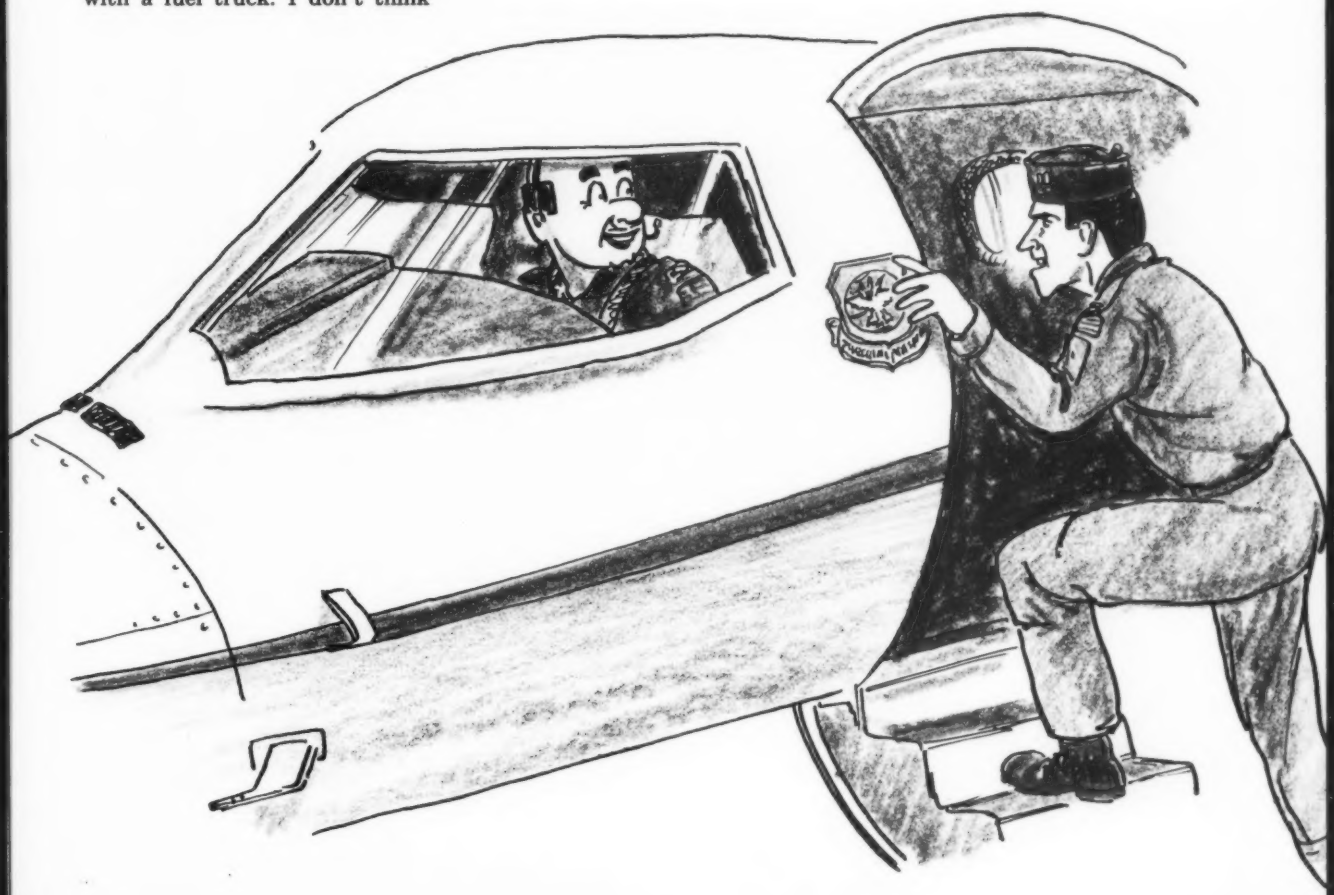
Yours faithfully,
Name withheld by request.

C.R. TERROR

The Ace of OSA Finds Hard Rainshowers.

"Boss, the DV's bags are offloaded," called Sammy through the open entrance door. "The transient alert guy said he'd be back in a couple of minutes with a fuel truck. I don't think they've seen a C-21 here recently; he wanted to know where the single point refueling panel was."

"That's what I like about these small bases, Sammy" replied C.R. "The few folks they have are



more than willing to help speed us on our way. I'll visit the Dispensers of Weather Wisdom while you monitor the refueling."

The Ace of Aerospace wandered into the combined base operations, transient alert, aero club, and passenger waiting lounge. Only the snack-o-matic vending machine snack bar was missing. A faded sign on the wall pointed up to the weather office. As he climbed the well-worn stairs, C.R. wondered what lay in store for the return trip. The previous forecaster had said there was a chance of afternoon and evening thunderstorms.

At the top of the stairs, over the doorway, hung the anticipated sign, "Flight Planning & Weather Office." As the Bald One entered, he discovered the usual flight planning table with charts and pubs, NOTAMS neatly hung along the wall and, in the far back corner, a sign posted above a rather intimidating computer terminal . . . "Weather office closed due to manpower cuts. Instructions in blue checklist. DO NOT TURN OFF TERMINAL." Scribbled on the yellowing margins of the sign were numbers the Ambient Aeronaut hoped were weather offices.

Taking the path of least resistance, C.R. picked up the phone and, with pudgy fingers, carefully dialed the most legible number. After two rings, a mechanical sounding voice announced the number was changed and began to give the new one. Frantically searching the pockets of his custom-tailored nomex flight suit for a writing implement, C.R. missed the first four digits. As the machine began to repeat the number, the line was preempted. After a moment's hesitation, he began redialing the number—this time with pencil in hand. The computer voice answered again, and the Magic Major copied the entire number onto the cover of an approach plate book. He immediately dialed the new number, anticipating the chance to speak with a "live" forecaster.

"Det 9, may I help you?" came the voice from the receiver.

"This is Major Terror, at Small Army Air Field. I need the weather at Scott for . . . say around 2230Z."

"Just a minute while I 'AR-Que' it," replied the voice at the other end of the line. "The radar summary last hour shows a weather watch area west of Scott,

with severe thunderstorms, tops to 42,000 feet. The watch area covers all of eastern Missouri, extends north to Iowa, and south to Little Rock. Scott weather is 3,000 overcast, 3 miles visibility with light rain showers, temperature 85, altimeter 29.98—falling. For your arrival time, same ceiling and vis, temperature 85, minimum altimeter 29.89, thunderstorms in the vicinity after 22Z. Any questions?"

"Sounds like those storms are moving toward our destination; we'll try to get back before they make their arrival. Thanks," finished the Great One.

Sammy strolled in just as C.R. finished and announced, "Jet's gased and ready to roll. No pax out of here. How's the weather and takeoff data?"

"Weather's no problem, just some thunderstorms to 42,000 feet," summarized C.R. "We can climb over them if we have to. I don't want to divert around them unless we must. I've got to get back before the storms hit home; I left Windsock tied in the backyard of Terror Manor. He'll be mighty upset if the thunder starts to boom and there's no place to hide. His doghouse is in the shop for a new roof and oriental carpets, you know." The Airways Airdale then handed his erstwhile copilot a blank TOLD card and the DD 175-1.

The Dauntless Duo headed downstairs, checked the local plumbing facilities, and headed for the Leaderjet. As Sammy strapped into the left seat, the Pompous Pilot proceeded to conduct the world's fastest walk-around inspection, completing all 21 through-flight items in under 45 seconds. It would have been quicker had he not caught his foot on the grounding cable hanging from the left tip tank as he headed for the entrance door.

C.R. closed the entrance door and began to squeeze into the Lear's right seat. "No wonder Tony never flew these jets. Why, they're as sleek as a new Jag on the outside, but cramped as an MG Midget on the inside. Good thing I'm not as tall as him. Start 'em up Sammy. We must be on our way."

"Center, this is Maux 26, climb in' to three-nine-zero," twanged C.R. in his best Chuck Yeager voice, "requestin' direct Scott."

"Maux 26, Center copies. Stand by on your request."

"Sammy, that radar looks a little flaky to me. All those thunderstorms in front of us and nothing on the scope. It's times like these I miss having a navigator to fine-tune the radar."

"Boss, the radar is working fine. Those storms are just out of range right now." As Long Suffering Sam finished the sentence, yellow and red blotches started to appear at the 200-mile range mark.

"Maux 26, cleared direct Scott, maintain 390."

"Maux 26, copies. And . . . ah . . . center, Maux 26 requests Flight Level 430 to get above weather," replied C.R.

The color weather radar display now had a nearly solid red return about 150 miles ahead of them. About the time C.R. punched the mike button to ask again for higher clearance, Center cleared the C-21 to climb to 430.

"Better get your mask on Sammy," stated the Master Manager. "I'd wear mine, but it makes me sound like my head's in a bucket when I talk on the radio. Don't want those airline types to know I'm sucking on the hose."

"Right boss. Looks like 430 might not clear those bumpers straight ahead. Shouldn't we deviate around them?" queried Sam.

"Nonsense, m'boy. My educated eyeball says we'll clear the tops by exactly 2,001 feet. We can't deviate, that'll just slow us down. Poor Windsock will be cowering if he's caught out in a storm. Besides, we already earned full per diem for this trip; no need for any delaying tactics now," replied the Capable Craft Commander.

Thin whisps of cirrus clouds began to obscure the CB-filled horizon. Intermittent light chop gradually changed to continuous moderate turbulence. Center approved everyone's request for deviations around the line. Then, like a curtain rising, the cirrus cleared and turbulence stopped. Before them was a smooth undercast, the color radar showed only green—rainshowers.

"What did I tell you Sammy? We're home safe now. No CBs between us and home."

"Maux 26, descend and cross Foristell at and maintain 12,000 feet, altimeter 29.90."

"Center, Maux 26, departin' four-three-zero, cross Foristell at and maintain 12, 29.90 for the altimeter.

"Sammy, you talk to ATC. I'll listen to ATIS and give command post a call."

A flip of the switch to the preset frequency produced, "Xray . . . due to rapidly changing

weather conditions, contact tower or approach control for latest information. Expect ILS runway 14. Scott information Xray."

"Command post, Maux . . ." C.R. stopped, realizing he hadn't changed selector to the command post frequency and was, in fact, transmiting on ATIS. He quickly changed to the correct frequency. "Command post, Maux 26. Blocks at 55, alpha one, no codes, no pax."

"Maux 26, command post. Copy your message. You're parking south ramp. Weather warning in effect for severe thunderstorms beginning on the hour."

As the Lear descended into the cloud deck at 30,000 feet, the radar still showed only green returns. Static on the VHF radio began overpowering ATC's calls. Turbulence increased from light to moderate in a matter of seconds. Along with the shaking, the precipitation seemed to get heavier and louder. As Sammy leveled at 12,000 feet, the green areas of the radar scope were replaced by broad areas of yellow and red surrounding the Dumbfounded Duo.

"Chief, looks like we're in for some rough going real soon."

"Sammy, it can't be that bad. I'll adjust the tilt upward for a better picture. All these red areas are just ground returns. The thunderstorms aren't supposed to be here for another 15 minutes. Just deviate toward that closest green area. And don't slow down until we have to get the gear."

Sam aimed the aircraft left toward a small green area that looked promising. Wind noise was replaced by the roar of very heavy rain; then came a roar louder than the defog blower—like standing inside a locomotive engine. It lasted only a few seconds before the trouble-seeking jet was back in VMC.

"Whaaaa, yikes, that was some rainshower. I'll have to speak to the weather wizards about their gross understatement of the meteorological conditions," griped C.R.

"Boss, I think you'll be listening to someone else first. Looks like the radar died; my tip tank's been hit by hail. I've got the field in sight. Let's ask for a visual."

C.R. called approach, then tower, who approved a visual approach and full stop landing for Maux 26. Sammy called twice for flaps 20 and gear down before the Addled Aircraft Commander responded and actuated them. As Long Sufferin' Sam called for the before-landing check, the Master Manipulator decided that given the current bad weather situattion and inop radar he would take over landing.

As he was about to drive off the flight line, Colonel Fang noticed a C-21 landing without strobe lights or recognition light. He turned his staff car toward the south ramp to greet the crew. C.R. recognized the white-roofed staff car and began to squirm in his seat.

"Sammy, you got the jet and checklist. I'll open the door for Colonel Fang."

Before C.R. could crawl out of his seat the "DOOR OPEN" light came on and Colonel Fang was inside the baby jet.

"Terror, you're in trouble! You've ruined another perfectly good plane by flying through hail," charged Colonel Fang.

"But the radar was showing only rainshowers . . ."

"That's enough Terror. Get in my car. We all have a strong desire to excel and complete missions, but you've got to use some common sense. Use all the information that's available—don't limit yourself to airborne radar when the situation warrants. You can't go on acting like the lone eagle anymore. Now, I think you've got an appointment with the Flight Surgeon. . . ." ✭

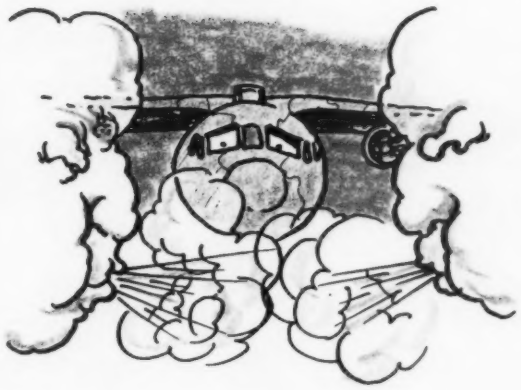
QUICKSTOPPERS

Some People Never Learn

Three days prior to the mishap this "dedicated" C-130 flight engineer developed an upper and lower respiratory infection. He was not scheduled to fly until the mishap day. The cold developed on a weekend when the clinic at the departure base was closed; however, the hospital at a neighboring facility had a flight surgeon available on demand. Rather than consulting the flight surgeon, the individual began self-medicating with Sudafed he bought over-the-counter. He discontinued self-medication the day prior to the mishap because he felt markedly better. He could clear his ears without difficulty and believed DNIF would be unnecessary. The next day he flew to a staging base as part of a deadhead crew. On descent from 18,000 feet, the mishap crewmember had difficulty clearing his ears and got behind the pressure changes. He tried to clear an ear block using Afrin and emergency pressure from an oxygen resulator but nothing worked. After landing, he learned his follow-on mission was delayed for two days. So, without seeing a flight surgeon, he entered crew rest. He awoke from a nap a short time later with sharp pain in the left ear. He reported to the clinic and was subsequently diagnosed by the flight surgeon as still having symptoms of sinusitis and bronchitis. He was grounded from flying in passenger status for 48 hours and from flying in a primary crew position for 10 days. Remember folks, you shouldn't be flying with colds or even a hint of symptoms.

Afterburner Equipped Starlifter

After leveling at FL 370, a loadmaster noticed fuel draining from the bottom of number one engine. The fuel ignited, making a 20-foot trail of flame behind the TF-33. He notified the flight deck crew who immediately pulled the fire T-handle and discharged the fire extinguishing agent. The fire was out within 30 seconds, and damage was limited to soot trails. Failure of the pressurization and dump valve allowed fuel into the lower engine cowling, equipping this Starlifter with afterburner.



"We'll Take Off Between Gusts"

Forecast winds for takeoff were 240-degrees at 15 knots with gusts to 25, and a weather warning for variable winds of 30 knots gusting to 55. Thunderstorms were also forecast. About 10 minutes before takeoff, ground control broadcast a weather advisory for crosswinds greater than 20 knots. Two minutes later, a weather warning was broadcast for surface winds gusting to 40 knots. At one minute before takeoff, a gust of 38 knots was recorded. The intrepid Starlifter crew taxied onto the runway for a standing takeoff. After setting takeoff thrust, the copilot held full right aileron into the wind.

As the pilot transitioned from nosewheel steering to the yoke, the right wing rose sharply. The aircraft veered to the left, the pilot went back to nosewheel steering to correct the aircraft to centerline, and directed the copilot to maintain full right aileron. He held full right aileron until rotation. The aircraft was in a slightly right-wing-low attitude at rotation. The remainder of the flight was uneventful. After landing, post flight walkaround revealed damage to the left wingtip. Recorded wind speeds showed a 40-knot gust across the runway occurred about one minute into the takeoff roll. Trying to take off between gusts isn't as easy as it appears and certainly not wise!

. . . and Away We Go!

The crew of this C-130 planned to complete a training sortie with a maximum effort landing on the local LZ. They noted no directional problems on final approach. Winds were light with an eight-knot right crosswind. The aircraft touched down close to the center of the touchdown zone, slightly left of centerline. With all wheels on the LZ, the pilot selected ground idle with the throttles, and paused. He then selected reverse thrust and the aircraft began pulling left. The copilot announced he was ready to help with the rudder and ailerons as the pilot placed all throttles back in ground idle. About this time, the aircraft departed the paved surface. The flight engineer was unable to check the engine instruments as the aircraft bounced on the grass and headed into a soybean field. The aircraft came to rest over 2,000 feet from the touchdown point. After the Herk was pulled from the soybean field, maintenance found the number four prop tended to go into pitchlock on its own. A wild ride, to say the least.

INDECISION

Flight planning, preflight, and departure of the aero club Cessna 177RG were normal. Following airwork in the practice area, the pilot returned to home drome for traffic pattern work. He lowered the gear on downwind and confirmed it down through gear light indications and a visual check of both main gears. He made a verbal gear check on short final with the same indications, and the main gear touched down just beyond the numbers. The pilot raised wing flaps for the go-around. The nose passed through the normal touchdown attitude; however, the propeller contacted the runway. The pilot increased power and lifted the nose to minimize damage and began a go-around. He was either airborne or very light on the gear for approximately 1,200 feet. The pilot was unable to later recall the sequence. A human factor explanation, however, led the investigator to believe the pilot raised the gear for the attempted go-around, reevaluated his decision, lowered the gear, and elected to set the aircraft on the main gear, skidding on the collapsed nose gear. All three gear folded as the aircraft settled on the runway and the aircraft slid to a stop after approximately 650 feet. Investigation revealed the nose gear lock assembly arm out of adjustment. No work had been performed since the leased aircraft arrived at the aero club. Although the Cessna 200-hour inspection requires a check of downlock adjustments, there is no guidance in the manual as to the manner of inspection. Obviously, the board recommended a change to the manual. As for the pilot, indecision could possibly be the key to flexibility.

Winners 1990 USAF Safety Plaques

Flight Safety Plaque

53d Weather Reconnaissance Squadron, Keesler AFB MS
62d Military Airlift Wing, McChord AFB WA
136th Tactical Airlift Group (ANG), Dallas TX
314th Tactical Airlift Wing, Little Rock AFB AR
375th Military Airlift Wing, Scott AFB IL
435th Tactical Airlift Wing, Rhein-Main AB Germany
436th Military Airlift Wing, Dover AFB DE
437th Military Airlift Wing, Charleston AFB SC
446th Military Airlift Wing (Assoc), McChord AFB WA

Explosives Safety Plaque

608th Aerial Port Squadron, Ramstein AB Germany

Nuclear Surety Plaque

62d Military Airlift Wing, McChord AFB WA
435th Tactical Airlift Wing, Rhein-Main AB Germany

Motorcycle Safety Plaque

834th Air Base Wing, Hurlburt Fld, FL

AIRCREW EARNS AIR MEDAL FOR AIRLIFT TO IRAN --Aircrew members who flew the first official MAC mission into Iran in 12 years have received the Air Medal for their historic flight. Maj. Gen. Paul E. Landers Jr., 21 AF/CC, presented the medals to Lt. Col. Pryor B. Timmons Jr., and crew in ceremonies 30 April at Charleston AFB SC. Other members of the 437 MAW crew were: Capt. Paul Vining, copilot; TSgt. Bradley Jordan and SSgt. James Simpson, flight engineers; and SSgt. Richard Alcoy and Sgt. Timothy Williams, loadmasters. (MNS)

AID TO BANGLADESH FLOWN BY MAC CREWS -- A C-141 from 60 MAW, Travis AFB CA and a C-5 Galaxy flying out of Saudi Arabia flew the first relief supplies into the country 10 May. A second C-5 delivered five Army UH-60 Blackhawks helicopter crews, air traffic control teams, Navy Seabees,and medical units on 13 May. (MNS)

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